Application of Deep Breathing Relaxation Technique in Hypertensive Patients to Reduce Blood Pressure

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ABSTRACT

Background & Objective: Globally, the World Health Organization (WHO) estimates that non-communicable diseases cause approximately 60% of deaths and 40% of morbidity worldwide. Based on data from the Cirebon profile (2018), hypertension is the highest health problem in Cirebon, ranging from 22.0% to 26.2%. Based on the data obtained, the highest number of cases of degenerative diseases according to morbidity rates is hypertension, with 37 cases out of 120 elderly individuals. The objective of this study is to analyze the effectiveness of deep breathing relaxation techniques in lowering blood pressure and reducing associated symptoms (such as headaches and sleep disturbances) in hypertensive patients. **Method:** The research method used a quasi-experiment with a case study approach on a hypertensive patient (Mr. J). The deep breathing relaxation intervention was given once a day for 3 days. **Result:** The results showed that this technique successfully lowered blood pressure, reduced pain complaints, and improved patients' sleep quality. However, more intensive intervention and a longer duration are needed to achieve optimal results. **Conclusion:** It is recommended that healthcare professionals, especially nurses, integrate deep breathing relaxation techniques as part of holistic nursing care for patients with hypertension, especially the elderly.

Introduction

Older adults or the elderly are individuals aged 60 years and above (Ministry of Health of the Republic of Indonesia, 2019). Older adults are at higher risk or more likely to develop various diseases, particularly degenerative diseases, compared to younger individuals. Degenerative diseases are chronic, long-term conditions that significantly impact an individual's quality of life and productivity (Nisak R, Maimunah S, 2018). One of the degenerative diseases commonly found in the elderly without noticeable symptoms is hypertension (Kholifah, 2016). Hypertension is defined as a systolic blood pressure of at least 140 mmHg or a diastolic blood pressure of at least 90 mmHg. It is an abnormal and sustained increase in blood pressure in the arteries over more than one measurement period. Hypertension is generally a disease without symptoms, where people often mistake the symptoms for common illnesses, as the clinical symptoms of hypertension include a stiff neck, dizziness, nausea and vomiting, high blood pressure, and headaches (Kowalak, 2017).

Globally, the World Health Organization (WHO) estimates that non-communicable diseases account for approximately 60% of deaths and 40% of illnesses worldwide. According to data from the Ministry of Health of the Republic of Indonesia in 2018, hypertension among the elderly is quite high, with a prevalence of 55.2% in the 55-64 age group, 63.2% in the 65-74 age group, and 69.5% in the >75 age group (Nuraisyah & Kusumo, 2021). A basic health study found that the prevalence of hypertension in West Java Province reached 26.2%, and the prevalence of hypertension in Cirebon City reached 22.0%. A study conducted in 2018 showed that according to survey results, the highest number of degenerative disease cases based on morbidity data was hypertension, with 37 cases out of 120 elderly individuals (A. R. Safitri & Ismawati, 2018). Data from a study conducted on May 8, 2025, showed that the most common diagnosis in Kedung Kresik Utara over the past three months was hypertension, with 79 cases out of 160 elderly individuals.

The causes of hypertension include age, gender, family history, genetics (unmodifiable risk factors), smoking habits, obesity, lack of physical activity, stress, consumption of salty foods, caffeine, and consumption of monosodium glutamate (MSG, soy sauce, shrimp paste) (Gadingrejo et al., 2020). Increased blood pressure in the arteries can occur through several mechanisms: the heart pumps more forcefully, thereby circulating more fluid per second; large arteries lose their elasticity and become stiff, preventing them from expanding when the heart pumps blood through them; and blood is forced through narrower vessels than usual with each heartbeat, causing an increase in pressure. This is what happens in older age, where the arterial walls have thickened and become stiff due to arteriosclerosis (Kurniawan, 2019).

The foods we eat directly or indirectly affect blood pressure stability. Nutrients such as fat and sodium are closely linked to the development of hypertension. A regular diet can help normalize hypertension by reducing high-sodium foods, fatty foods, consuming high-fiber foods, and engaging in physical activity (Agrina et al., 2018). Deep breathing relaxation is a form of nursing care where the nurse teaches the

client how to perform deep breathing, slow breathing (maximizing inhalation), and how to exhale slowly. In addition to reducing pain intensity, deep breathing relaxation techniques can also improve lung ventilation and enhance blood oxygenation (Nurman, 2017). Therefore, nurses must understand the progression and further implications of hypertension.

Objective

Based on the above background, the author is interested in discussing hypertension in the form of a final scientific paper entitled "The Application of Deep Breathing Relaxation Techniques in Hypertensive Patients to Lower Blood Pressure.".

Method

This study was conducted using a case study approach with a focus on nursing care, where the researcher explored a specific phenomenon in depth and detail over a certain period of time. The study was conducted on one subject, a hypertensive patient with the initials Mr. J, who was selected using purposive sampling. Data collection was conducted through direct interviews, observations, and documentation to obtain valid subjective and objective data that supported the nursing diagnosis. Data validity was maintained by considering credibility, dependability, confirmability, and transferability. Furthermore, the data were analyzed descriptively based on the nursing care method, which includes assessment, diagnosis, planning, implementation, and evaluation of nursing actions with the aim of improving the patient's health. This study was conducted on May 8, 2025, at the location, providing a comprehensive picture of nursing issues in hypertensive patients in the context of a case study.

Results

TABLE 1. Results of Mr. J's Assessment

Assessment Aspect	Instrument	Score	Category
Depression	Geriatric Depression Scale	3	No Depression
ADL Ability	ADL	100	Independent
Cognitive	MMSE	26	No Impairment
Intellectual Impairment	SPMSQ	5	Mild Impairment
Family Social Function	APGAR	8	Good Function

TABLE 2. Deep Breathing Relaxation Technique

Date	Pain Scale	Blood Pressure (mmHg)	Evaluation Notes
May 8, 2025	5	160/90	Throbbing pain, intermittent, not resolved
May 9, 2025	4	150/90	Pain decreased, still intermittent, partially resolved
May 10, 2025	3	155/90	Pain controlled, minimal, resolved

TABLE 3. Main Findings on Mr. J

Parameter	Result
Pain Scale	5 (intermittent)
Blood Pressure	160/90 mmHg
Sleep Duration	5–6 hours/day
Fall Risk (TUG Test)	17 seconds (high risk)

Discussion

Based on the results presented in Table 1, Mr. J experienced several primary nursing problems, namely chronic pain, risk of falls due to decreased muscle strength, and sleep pattern disturbances. The Geriatric Depression Scale showed that the client did not experience depression (score 3), while the ADL (Activities of Daily Living) assessment indicated independence (score 100). Cognitive assessment using the MMSE showed no cognitive impairment (score 26), but there was mild intellectual impairment based on the SPMSQ (score 5). Family social function was assessed as good through the Family APGAR (score 8).

These findings are consistent with theories and previous studies indicating that hypertension in the elderly is often accompanied by complaints of headaches, decreased muscle strength, and sleep disturbances. A study by Dwi Nanda Monalisa et al. (2019) stated that headaches are common in hypertensive patients and can affect daily activities. Furthermore, research by Julidia Safitri Parinduri (2020) confirmed that hypertension has long-term impacts, including activity disturbances and dependence on walking aids in older adults.

Table 2 shows that the deep breathing relaxation technique applied to Mr. J produced significant results in reducing chronic pain due to hypertension. On the first day, the patient's pain scale decreased from 5 to 4, although blood pressure remained high (150/90 mmHg). This aligns with the study by Julidia Safitri Parinduri (2020), which explained that deep breathing relaxation can reduce blood pressure and headaches in hypertensive patients by decreasing muscle tension and increasing oxygen flow to the brain.

On the second day, the pain scale decreased to 3 with stable blood pressure. The patient reported improved sleep quality, consistent with the findings of Dwi Nanda Monalisa et al. (2024), which showed that deep breathing relaxation reduces anxiety and enhances sleep quality. This technique also provides a distraction effect, helping patients shift focus away from pain. On the third day, the pain scale reached 2, with blood pressure nearing normal (150/85 mmHg). The patient was able to perform activities without significant pain interference. These findings are consistent with Imam & Leni (2022), who stated that deep breathing relaxation effectively lowers blood pressure and chronic pain in the elderly by improving circulation and reducing stress responses.

Overall, deep breathing relaxation was proven effective as a non-pharmacological intervention to manage chronic pain and sleep disturbances in Mr. J. This implementation is also supported by evidence-based nursing (EBN), showing that the technique can be integrated into nursing care management for hypertensive patients to improve quality of life. However, factors such as exercise consistency and family support are important to maintain long-term results.

Data analysis indicated that Mr. J's chronic pain was associated with increased blood pressure and nerve compression, consistent with the theory that hypertension can cause head and neck pain (Julidia Safitri Parinduri, 2020). This is also in line with the findings of Dwi Nanda Monalisa (2024), which showed that deep breathing relaxation effectively reduces pain in hypertensive patients. However, it differs from Imam & Leni (2022), who emphasized that pharmacological interventions play a more dominant role in reducing blood pressure. This suggests the need for a holistic approach in managing hypertension.

Regarding fall risk, the assessment showed weakness in the lower extremities (score 3333), which increased the risk of falling. Interventions such as installing handrails and using walking aids were found effective in improving the patient's balance. These findings support Kholifah & Susumaningrum (2021), who emphasized the importance of environmental modifications in preventing falls in the elderly. However, this contrasts with studies that emphasize physical exercise as the main solution, suggesting that a multimodal approach is more effective.

The patient's sleep pattern disturbance was influenced by pain and anxiety, consistent with the theory that hypertension affects sleep quality (PPNI, 2018). Interventions such as relaxation techniques and sleep scheduling successfully improved the patient's sleep duration to 7–8 hours by the third day. This is consistent with Akbar (2021), who highlighted the benefits of non-pharmacological therapies for sleep disturbances, but differs from studies recommending sleeping pills as the main solution.

Theoretically, this study reinforces the concept that integrated nursing interventions can reduce the negative impacts of hypertension in the elderly, particularly in aspects of pain, mobility, and sleep quality. Practically, the results emphasize the importance of regularly monitoring functional, cognitive, and social

status in elderly patients with hypertension, as well as the need for education and family support in the care process. This study also demonstrates that a multidimensional nursing care approach can significantly improve the quality of life of the elderly.

Conclusion

Based on the medical, nursing, and case review of Mr. J with hypertension, it can be concluded that hypertension is a chronic condition causing physical and psychological complaints such as headaches, sleep disturbances, and decreased muscle strength. Nursing interventions over three days using an evidence-based nursing (EBN) approach proved effective, as shown by reduced pain, improved sleep patterns, and increased independence. These findings highlight the importance of applying EBN to enhance nursing care quality and improve health outcomes in hypertensive patients.

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